

Results

Overall Prevalence at Birth

There were 300,431 live births to residents of the areas covered by the Texas Birth Defects Registry during 1996 and 1997. A total of 9,636 cases was detected with one or more of the birth defects monitored in 1996 and 1997. Of these, 9,300 were live born, corresponding to 3.1 percent of all live births in the registry coverage area. In addition to live births, 150 cases were detected among later fetal deaths (≥ 20 weeks' gestation or ≥ 500 grams) and 159 cases among induced pregnancy terminations that did not result in a live birth (also ≥ 20 weeks or ≥ 500 grams). There were 27 cases with other or unspecified pregnancy outcomes.

The most common birth defect was patent ductus arteriosus, which affected 54.19 cases per 10,000 live births (Table 1). Patent ductus arteriosus is a heart defect in which a blood vessel exists between the pulmonary artery and the aorta. This blood vessel is normal in fetal life, and in the vast majority of babies the vessel closes spontaneously after birth. When the vessel fails to close after birth, this can cause abnormal cardiac circulation and pressure in the heart during contractions.

The three most common birth defects were heart defects: patent ductus arteriosus; atrial septal defect; and ventricular septal defect. Rounding out the ten leading birth defects were hypospadias or epispadias; obstructive genitourinary defect; pyloric stenosis; Down syndrome; cleft lip with or without cleft palate; hydrocephaly; and cleft palate alone (without cleft lip). The prevalence of cleft lip with or without cleft palate (11.52 cases per 10,000 live births) was almost twice the prevalence of cleft palate alone (5.99 cases per 10,000 live births).

Spina bifida without anencephaly was the 17th most common birth defect, affecting 4.46 cases per 10,000 live births. Anencephaly was the 26th most common anomaly, affecting 2.76 cases per 10,000 live births.

Figure 2: Most common birth defects, Texas, 1996-1997

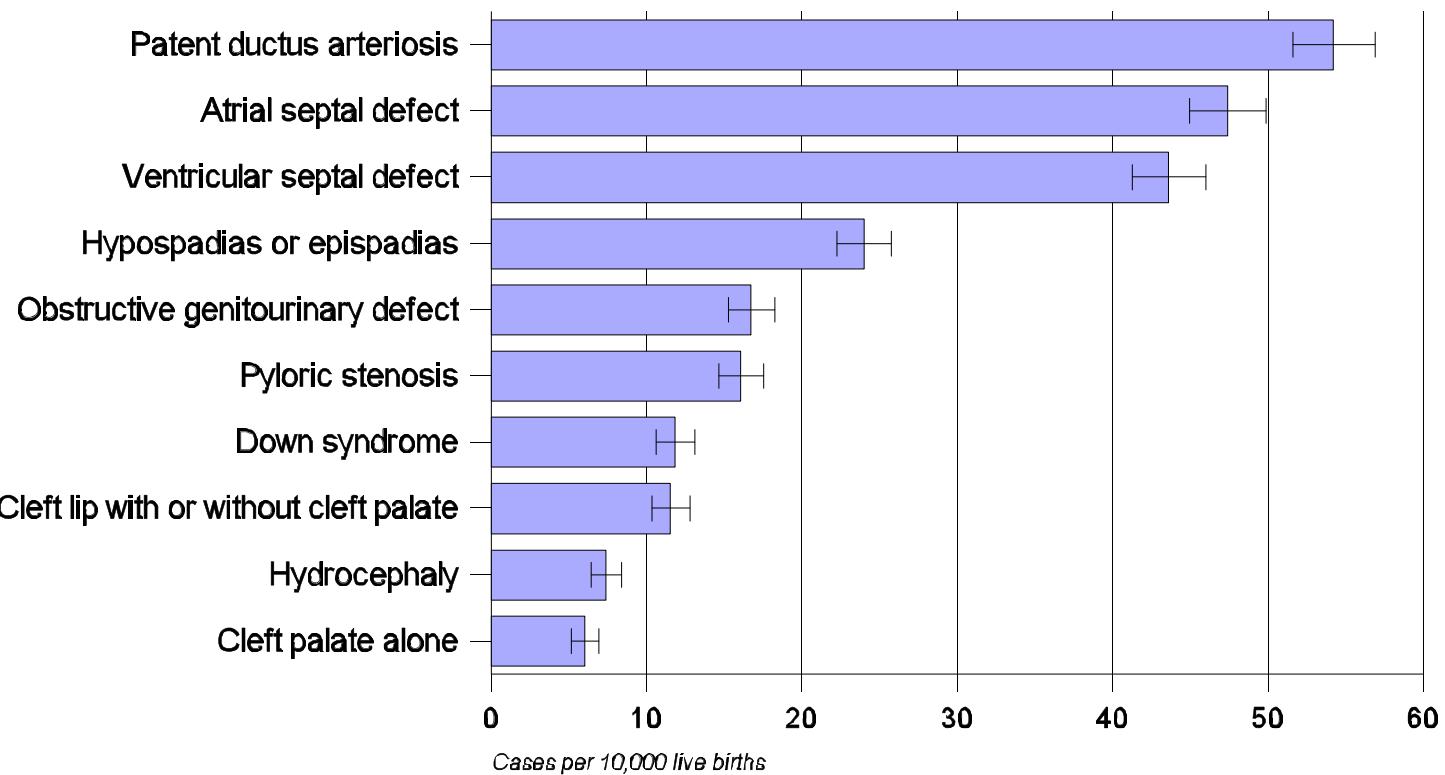


Table 1: Prevalence of Birth Defects in the Area Covered by the Texas Birth Defects Registry, 1996-1997

Defect	Cases	Rate [†]	95% Confidence Interval for Rate	
CENTRAL NERVOUS SYSTEM				
Anencephaly	83	2.76	2.20	-
Spina bifida without anencephaly	134	4.46	3.74	-
Encephalocele	29	0.97	0.65	-
Microcephaly	171	5.69	4.87	-
Holoprosencephaly	45	1.50	1.09	-
Hydrocephaly	221	7.36	6.42	-
EYE				
Anophthalmia	15	0.50	0.28	-
Microphthalmia	70	2.33	1.82	-
Cataract	31	1.03	0.70	-
Aniridia	2	0.07	0.01	-
Anotia or microtia	84	2.80	2.23	-
CARDIOVASCULAR AND RESPIRATORY				
Common truncus	19	0.63	0.38	-
Transposition of the great vessels	144	4.79	4.04	-
Tetralogy of Fallot	87	2.90	2.32	-
Ventricular septal defect	1309	43.57	41.25	-
Atrial septal defect	1423	47.37	44.94	-
Endocardial cushion defect	100	3.33	2.71	-
Pulmonary valve atresia or stenosis	145	4.83	4.07	-
Tricuspid valve atresia or stenosis	72	2.40	1.88	-
Ebstein anomaly	13	0.43	0.23	-
Aortic valve stenosis	68	2.26	1.76	-
Hypoplastic left heart syndrome	70	2.33	1.82	-
Patent ductus arteriosus	1628	54.19	51.60	-
Coarctation of the aorta	145	4.83	4.07	-
Choanal atresia or stenosis	36	1.20	0.84	-
Agenesis, aplasia, or hypoplasia of the lung	134	4.46	3.74	-
ORAL CLEFTS				
Cleft palate alone (without cleft lip)	180	5.99	5.15	-
Cleft lip with or without cleft palate	346	11.52	10.34	-
GASTROINTESTINAL				
Tracheoesophageal fistula/esophageal atresia	70	2.33	1.82	-
Pyloric stenosis	482	16.04	14.64	-
Stenosis or atresia of small intestine	95	3.16	2.56	-
Stenosis or atresia of large intestine, rectum, or anal canal	123	4.09	3.40	-
Hirschsprung disease	39	1.30	0.92	-
Biliary atresia	17	0.57	0.33	-

[†]Cases per 10,000 live births.

Table 1: Prevalence of Birth Defects in the Area Covered by the Texas Birth Defects Registry, 1996-1997

Defect	Cases	Rate [†]	95% Confidence Interval for Rate	
GENITOURINARY				
Hypospadias or epispadias	720	23.97	22.25	- 25.78
Renal agenesis or dysgenesis	141	4.69	3.95	- 5.53
Obstructive genitourinary defect	502	16.71	15.28	- 18.24
Bladder exstrophy	5	0.17	0.05	- 0.39
MUSCULOSKELETAL				
Congenital hip dislocation	169	5.63	4.81	- 6.54
Reduction defects of the upper limbs	123	4.09	3.40	- 4.88
Reduction defects of the lower limbs	39	1.30	0.92	- 1.77
Craniosynostosis	81	2.70	2.14	- 3.35
Diaphragmatic hernia	66	2.20	1.70	- 2.79
Omphalocele	59	1.96	1.49	- 2.53
Gastroschisis	101	3.36	2.74	- 4.08
CHROMOSOMAL				
Down syndrome (includes trisomy 21, translocations, and mosaics)	355	11.82	10.62	- 13.11
Patau syndrome (includes trisomy 13, translocations, and mosaics)	27	0.90	0.59	- 1.31
Edwards syndrome (includes trisomy 18, translocations, and mosaics)	79	2.63	2.08	- 3.28
OTHER				
Fetal alcohol syndrome or other alcohol related birth defects	2	0.07	0.01	- 0.24
Possible/probable FAS or other alcohol related birth defects	18	0.60	0.36	- 0.95

[†]Cases per 10,000 live births.

Prevalence at Birth by Mother's Age

Prevalence of birth defects by maternal age group is shown in Table 2. There were 14 birth defects with statistically significant variation between mothers of different age groups. These defects are marked with an asterisk in the table, and are shown graphically in Figures 3, 4, and 5.

Among the birth defects that differed significantly by maternal age, younger mothers had the highest rates for reduction defects of the upper limbs; reduction defects of the lower limbs; and gastroschisis. Both younger mothers and older mothers had higher rates for microcephaly and stenosis or atresia of the large intestine, rectum, or anal canal. The highest rates were found among older mothers for the following birth defects: hydrocephaly; tetralogy of Fallot; ventricular septal defect; atrial septal defect; endocardial cushion defect; pulmonary valve atresia or stenosis; patent ductus arteriosus; Down syndrome; and Edwards syndrome.

Figure 3: Birth defects with significant variation by maternal age, Texas, 1996-1997

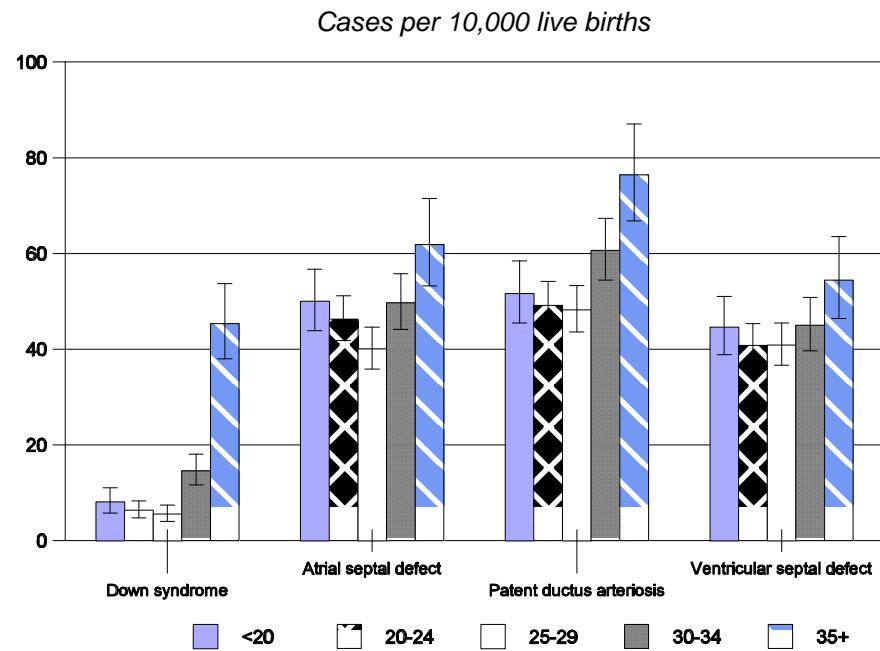


Figure 4: Birth defects with significant variation by maternal age, Texas, 1996-1997

Cases per 10,000 live births

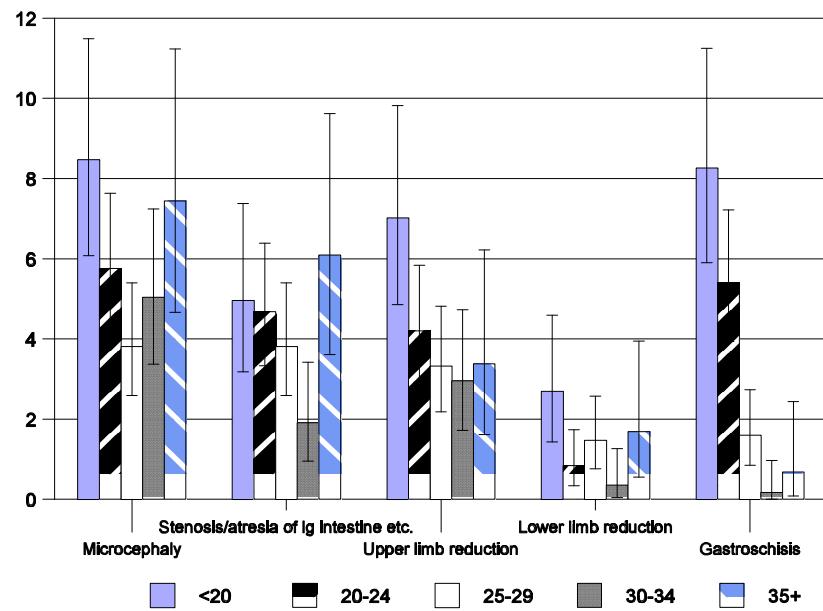


Figure 5: Birth defects with significant variation by maternal age, Texas, 1996-1997

Cases per 10,000 live births

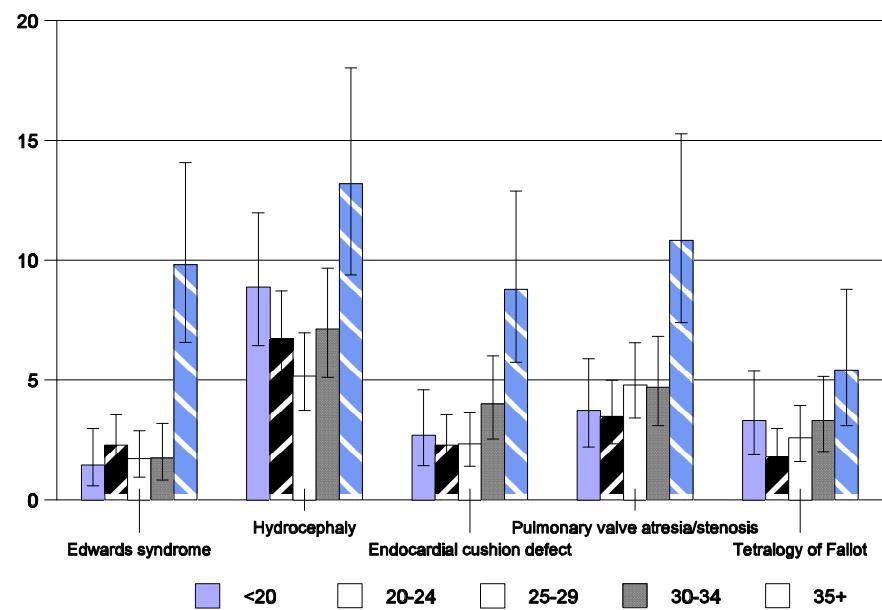


Table 2: Prevalence of Birth Defects by Mother's Age, Texas, 1996-1997

Defect	Mother's Age	Cases	Rate [†]	95% Confidence Interval for Rate	
CENTRAL NERVOUS SYSTEM					
Anencephaly	< 20	21	4.34	2.69	- 6.63
	20-24	21	2.52	1.56	- 3.85
	25-29	22	2.70	1.69	- 4.09
	30-34	14	2.43	1.33	- 4.08
	35 +	5	1.69	0.55	- 3.95
Spina bifida without anencephaly	< 20	31	6.40	4.35	- 9.09
	20-24	34	4.08	2.82	- 5.70
	25-29	36	4.42	3.10	- 6.12
	30-34	20	3.47	2.12	- 5.37
	35 +	13	4.40	2.34	- 7.52
Encephalocele	< 20	4	0.83	0.23	- 2.12
	20-24	11	1.32	0.66	- 2.36
	25-29	7	0.86	0.35	- 1.77
	30-34	3	0.52	0.11	- 1.52
	35 +	4	1.35	0.37	- 3.46
Microcephaly*	< 20	41	8.47	6.08	- 11.49
	20-24	48	5.76	4.24	- 7.63
	25-29	31	3.81	2.59	- 5.40
	30-34	29	5.04	3.37	- 7.24
	35 +	22	7.44	4.66	- 11.26
Holoprosencephaly	< 20	11	2.27	1.13	- 4.07
	20-24	12	1.44	0.74	- 2.51
	25-29	9	1.11	0.51	- 2.10
	30-34	6	1.04	0.38	- 2.27
	35 +	7	2.37	0.95	- 4.88
Hydrocephaly*	< 20	43	8.88	6.43	- 11.97
	20-24	56	6.71	5.07	- 8.72
	25-29	42	5.16	3.72	- 6.97
	30-34	41	7.12	5.11	- 9.66
	35 +	39	13.19	9.38	- 18.03
EYE					
Anophthalmia	< 20	5	1.03	0.34	2.41
	20-24	5	0.60	0.19	- 1.40
	25-29	1	0.12	0.00	- 0.68
	30-34	2	0.35	0.04	- 1.26
	35 +	2	0.68	0.08	- 2.44
Microphthalmia	< 20	15	3.10	1.73	- 5.11
	20-24	17	2.04	1.19	- 3.26
	25-29	16	1.96	1.12	- 3.19
	30-34	12	2.08	1.08	- 3.64
	35 +	10	3.38	1.62	- 6.22
Cataract	< 20	7	1.45	0.58	- 2.98
	20-24	7	0.84	0.34	- 1.73
	25-29	6	0.74	0.27	- 1.60
	30-34	5	0.87	0.28	- 2.03
	35 +	6	2.03	0.74	- 4.42
Aniridia	< 20	0	0.00	0.00	- 0.76
	20-24	1	0.12	0.00	- 0.67
	25-29	1	0.12	0.00	- 0.68
	30-34	0	0.00	0.00	- 0.64
	35 +	0	0.00	0.00	- 1.25

*Statistically significant difference among age groups.

[†]Cases per 10,000 live births.

Table 2: Prevalence of Birth Defects by Mother's Age, Texas, 1996-1997

Defect	Mother's Age	Cases	Rate [†]	95% Confidence Interval for Rate	
Anotia or microtia	< 20	18	3.72	2.20	- 5.88
	20-24	19	2.28	1.37	- 3.56
	25-29	29	3.56	2.38	- 5.11
	30-34	12	2.08	1.08	- 3.64
	35 +	6	2.03	0.74	- 4.42
CARDIOVASCULAR AND RESPIRATORY					
Common truncus	< 20	5	1.03	0.34	- 2.41
	20-24	6	0.72	0.26	- 1.57
	25-29	4	0.49	0.13	- 1.26
	30-34	4	0.69	0.19	- 1.78
	35 +	0	0.00	0.00	- 1.25
Transposition of the great vessels	< 20	18	3.72	2.20	- 5.88
	20-24	44	5.28	3.83	- 7.08
	25-29	29	3.56	2.38	- 5.11
	30-34	31	5.39	3.66	- 7.64
	35 +	22	7.44	4.66	- 11.26
Tetralogy of Fallot*	< 20	16	3.31	1.89	- 5.37
	20-24	15	1.80	1.01	- 2.97
	25-29	21	2.58	1.60	- 3.94
	30-34	19	3.30	1.99	- 5.15
	35 +	16	5.41	3.09	- 8.79
Ventricular septal defect*	< 20	216	44.63	38.87	- 50.99
	20-24	340	40.77	36.56	- 45.33
	25-29	333	40.89	36.62	- 45.51
	30-34	259	44.99	39.68	- 50.82
	35 +	161	54.44	46.36	- 63.53
Atrial septal defect*	< 20	242	50.00	43.90	- 56.71
	20-24	386	46.28	41.79	- 51.13
	25-29	326	40.03	35.81	- 44.61
	30-34	286	49.69	44.09	- 55.79
	35 +	183	61.88	53.24	- 71.52
Endocardial cushion defect*	< 20	13	2.69	1.43	- 4.59
	20-24	19	2.28	1.37	- 3.56
	25-29	19	2.33	1.40	- 3.64
	30-34	23	4.00	2.53	- 6.00
	35 +	26	8.79	5.74	- 12.88
Pulmonary valve atresia or stenosis*	< 20	18	3.72	2.20	- 5.88
	20-24	29	3.48	2.33	- 4.99
	25-29	39	4.79	3.41	- 6.55
	30-34	27	4.69	3.09	- 6.82
	35 +	32	10.82	7.40	- 15.28
Tricuspid valve atresia or stenosis	< 20	8	1.65	0.71	- 3.26
	20-24	17	2.04	1.19	- 3.26
	25-29	20	2.46	1.50	- 3.79
	30-34	15	2.61	1.46	- 4.30
	35 +	12	4.06	2.10	- 7.09
Ebstein anomaly	< 20	0	0.00	0.00	- 0.76
	20-24	2	0.24	0.03	- 0.87
	25-29	6	0.74	0.27	- 1.60
	30-34	3	0.52	0.11	- 1.52
	35 +	2	0.68	0.08	- 2.44

*Statistically significant difference among age groups.

[†]Cases per 10,000 live births.

Table 2: Prevalence of Birth Defects by Mother's Age, Texas, 1996-1997

Defect	Mother's Age	Cases	Rate [†]	95% Confidence Interval for Rate		
Aortic valve stenosis	< 20	9	1.86	0.85	-	3.53
	20-24	17	2.04	1.19	-	3.26
	25-29	21	2.58	1.60	-	3.94
	30-34	16	2.78	1.59	-	4.51
	35 +	5	1.69	0.55	-	3.95
Hypoplastic left heart syndrome	< 20	13	2.69	1.43	-	4.59
	20-24	23	2.76	1.75	-	4.14
	25-29	12	1.47	0.76	-	2.57
	30-34	11	1.91	0.95	-	3.42
	35 +	11	3.72	1.86	-	6.66
Patent ductus arteriosus*	< 20	250	51.65	45.45	-	58.47
	20-24	410	49.16	44.53	-	54.15
	25-29	393	48.26	43.61	-	53.26
	30-34	349	60.63	54.45	-	67.31
	35 +	226	76.42	66.78	-	87.06
Coarctation of the aorta	< 20	16	3.31	1.89	-	5.37
	20-24	46	5.52	4.04	-	7.36
	25-29	30	3.68	2.49	-	5.26
	30-34	35	6.08	4.24	-	8.46
	35 +	18	6.09	3.61	-	9.62
Choanal atresia or stenosis	< 20	7	1.45	0.58	-	2.98
	20-24	12	1.44	0.74	-	2.51
	25-29	9	1.11	0.51	-	2.10
	30-34	4	0.69	0.19	-	1.78
	35 +	4	1.35	0.37	-	3.46
Agenesis, aplasia, or hypoplasia of the lung	< 20	31	6.40	4.35	-	9.09
	20-24	38	4.56	3.22	-	6.25
	25-29	32	3.93	2.69	-	5.55
	30-34	22	3.82	2.40	-	5.79
	35 +	11	3.72	1.86	-	6.66
ORAL CLEFTS						
Cleft palate alone (without cleft lip)	< 20	33	6.82	4.69	-	9.58
	20-24	42	5.04	3.63	-	6.81
	25-29	54	6.63	4.98	-	8.65
	30-34	35	6.08	4.24	-	8.46
	35 +	16	5.41	3.09	-	8.79
Cleft lip with or without cleft palate	< 20	50	10.33	7.67	-	13.62
	20-24	82	9.83	7.82	-	12.20
	25-29	107	13.14	10.77	-	15.88
	30-34	61	10.60	8.11	-	13.61
	35 +	46	15.55	11.39	-	20.75
GASTROINTESTINAL						
Tracheoesophageal fistula / esophageal atresia	< 20	8	1.65	0.71	-	3.26
	20-24	21	2.52	1.56	-	3.85
	25-29	19	2.33	1.40	-	3.64
	30-34	11	1.91	0.95	-	3.42
	35 +	11	3.72	1.86	-	6.66
Pyloric stenosis	< 20	85	17.56	14.03	-	21.72
	20-24	127	15.23	12.70	-	18.12
	25-29	139	17.07	14.35	-	20.15
	30-34	85	14.77	11.80	-	18.26
	35 +	46	15.55	11.39	-	20.75

*Statistically significant difference among age groups.

[†]Cases per 10,000 live births.

Table 2: Prevalence of Birth Defects by Mother's Age, Texas, 1996-1997

Defect	Mother's Age	Cases	Rate [†]	95% Confidence Interval for Rate	
Stenosis or atresia of small intestine	< 20	19	3.93	2.36	- 6.13
	20-24	26	3.12	2.04	- 4.57
	25-29	23	2.82	1.79	- 4.24
	30-34	11	1.91	0.95	- 3.42
	35 +	16	5.41	3.09	- 8.79
Stenosis or atresia of large intestine, rectum, or anal canal*	< 20	24	4.96	3.18	- 7.38
	20-24	39	4.68	3.33	- 6.39
	25-29	31	3.81	2.59	- 5.40
	30-34	11	1.91	0.95	- 3.42
	35 +	18	6.09	3.61	- 9.62
Hirschsprung disease	< 20	3	0.62	0.13	- 1.81
	20-24	13	1.56	0.83	- 2.67
	25-29	13	1.60	0.85	- 2.73
	30-34	7	1.22	0.49	- 2.51
	35 +	3	1.01	0.21	- 2.96
Biliary atresia	< 20	1	0.21	0.01	- 1.15
	20-24	8	0.96	0.41	- 1.89
	25-29	0	0.00	0.00	- 0.45
	30-34	5	0.87	0.28	- 2.03
	35 +	3	1.01	0.21	- 2.96
GENITOURINARY					
Hypospadias or epispadias	< 20	106	21.90	17.93	- 26.49
	20-24	178	21.34	18.32	- 24.72
	25-29	220	27.01	23.56	- 30.83
	30-34	143	24.84	20.94	- 29.26
	35 +	73	24.68	19.35	- 31.04
Renal agenesis or dysgenesis	< 20	28	5.79	3.84	- 8.36
	20-24	34	4.08	2.82	- 5.70
	25-29	40	4.91	3.51	- 6.69
	30-34	27	4.69	3.09	- 6.82
	35 +	12	4.06	2.10	- 7.09
Obstructive genitourinary defect	< 20	88	18.18	14.58	- 22.40
	20-24	127	15.23	12.70	- 18.12
	25-29	138	16.94	14.24	- 20.02
	30-34	93	16.16	13.04	- 19.79
	35 +	56	18.94	14.30	- 24.59
Bladder exstrophy	< 20	2	0.41	0.05	- 1.49
	20-24	2	0.24	0.03	- 0.87
	25-29	0	0.00	0.00	- 0.45
	30-34	1	0.17	0.00	- 0.97
	35 +	0	0.00	0.00	- 1.25
MUSCULOSKELETAL					
Congenital hip dislocation	< 20	33	6.82	4.69	- 9.58
	20-24	36	4.32	3.02	- 5.98
	25-29	47	5.77	4.24	- 7.67
	30-34	36	6.25	4.38	- 8.66
	35 +	17	5.75	3.35	- 9.20
Reduction defects of the upper limbs*	< 20	34	7.02	4.86	- 9.82
	20-24	35	4.20	2.92	- 5.84
	25-29	27	3.32	2.18	- 4.82
	30-34	17	2.95	1.72	- 4.73
	35 +	10	3.38	1.62	- 6.22

*Statistically significant difference among age groups.

[†]Cases per 10,000 live births.

Table 2: Prevalence of Birth Defects by Mother's Age, Texas, 1996-1997

Defect	Mother's Age	Cases	Rate [†]	95% Confidence Interval for Rate	
Reduction defects of the lower limbs*	< 20	13	2.69	1.43	- 4.59
	20-24	7	0.84	0.34	- 1.73
	25-29	12	1.47	0.76	- 2.57
	30-34	2	0.35	0.04	- 1.26
	35 +	5	1.69	0.55	- 3.95
Craniosynostosis	< 20	6	1.24	0.45	- 2.70
	20-24	22	2.64	1.65	- 3.99
	25-29	28	3.44	2.28	- 4.97
	30-34	14	2.43	1.33	- 4.08
	35 +	11	3.72	1.86	- 6.66
Diaphragmatic hernia	< 20	14	2.89	1.58	- 4.85
	20-24	18	2.16	1.28	- 3.41
	25-29	14	1.72	0.94	- 2.88
	30-34	16	2.78	1.59	- 4.51
	35 +	4	1.35	0.37	- 3.46
Omphalocele	< 20	6	1.24	0.45	- 2.70
	20-24	14	1.68	0.92	- 2.82
	25-29	17	2.09	1.22	- 3.34
	30-34	12	2.08	1.08	- 3.64
	35 +	10	3.38	1.62	- 6.22
Gastroschisis*	< 20	40	8.26	5.90	- 11.25
	20-24	45	5.40	3.94	- 7.22
	25-29	13	1.60	0.85	- 2.73
	30-34	1	0.17	0.00	- 0.97
	35 +	2	0.68	0.08	- 2.44
CHROMOSOMAL					
Down syndrome (includes trisomy 21, translocations, and mosaics)*	< 20	39	8.06	5.73	- 11.02
	20-24	53	6.36	4.76	- 8.31
	25-29	45	5.53	4.03	- 7.39
	30-34	84	14.59	11.64	- 18.07
	35 +	134	45.31	37.96	- 53.66
Patau syndrome (includes trisomy 13, translocations, and mosaics)	< 20	6	1.24	0.45	- 2.70
	20-24	9	1.08	0.49	- 2.05
	25-29	3	0.37	0.08	- 1.08
	30-34	3	0.52	0.11	- 1.52
	35 +	6	2.03	0.74	- 4.42
Edwards syndrome (includes trisomy 18, translocations, and mosaics)*	< 20	7	1.45	0.58	- 2.98
	20-24	19	2.28	1.37	- 3.56
	25-29	14	1.72	0.94	- 2.88
	30-34	10	1.74	0.83	- 3.19
	35 +	29	9.81	6.57	- 14.08
OTHER					
Fetal alcohol syndrome or other alcohol related birth defects	< 20	0	0.00	0.00	- 0.76
	20-24	0	0.00	0.00	- 0.44
	25-29	0	0.00	0.00	- 0.45
	30-34	0	0.00	0.00	- 0.64
	35 +	2	0.68	0.08	- 2.44
Possible/probable FAS or other alcohol related birth defects	< 20	2	0.41	0.05	- 1.49
	20-24	2	0.24	0.03	- 0.87
	25-29	3	0.37	0.08	- 1.08
	30-34	6	1.04	0.38	- 2.27
	35 +	5	1.69	0.55	- 3.95

*Statistically significant difference among age groups.

[†]Cases per 10,000 live births.